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Enthalpies of Dissolution of Lithium Perchlorate in Diethyl Ether, Acetone, Acetonitrile, and Dimethyl Sulfoxide and Its Acceleration Effect on Cycloaddition Reactions

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Abstract

The integral enthalpies of dissolution of lithium perchlorate in diethyl ether, acetone, acetonitrile, and dimethyl sulfoxide were determined by calorimetry at 298.2 K: -6.2, -9.1, -15.9, and -18.0 kcal/mol, respectively. The concentration dependence of the integral enthalpy of dissolution of lithium perchlorate in diethyl ether was established in the range from 3x10-3 to 5.6 M. The exothermic effect of dissolution in ether decreases from -6 to -5 kcal/mol at low salt concentrations (3x10-3-3x10-2 M), remains constant in the range of salt concentrations from 5x10-2-1.3 M, and then smoothly decreases to -3.2 kcal/mol at a salt concentration of 5.6 M.